

Amendments to the Claims

The following list of claims replaces all previous versions of claims. Applicants have amended claims 1 and 4-5 for clarity purpose.

1. (Currently Amended) A copper interconnect comprising:

an impure copper seed layer derived from [[an]] a first impure copper source ~~with a,~~ said impure copper seed layer has a first content of impurities ~~that and~~ is deposited on a barrier layer, said barrier layer prevents substantial diffusion of copper through to an underlying insulating layer; and

an impure copper fill derived from [[an]] a second impure copper source ~~with a,~~ said impure copper fill has a second content of impurities ~~that and~~ fills an opening in said underlying insulating layer ~~that is deposited and on~~ said impure copper seed layer;

wherein material composition of said impure copper seed layer is substantially the same as material composition of said impure copper fill ~~because said copper source of said impure copper seed layer is equivalent to said copper source of the impure copper, however except~~ some impurities in the impure copper fill are absent from the impure copper seed layer as a consequence of deposition of the impure copper seed layer; and ~~wherein~~ said first impurity content of said impure copper seed layer comprises not more than 1.20% by weight and not less than or equal to 0.001% by weight.

2-3. (Cancelled)

4. (Currently Amended) A copper interconnect as in claim 1, wherein ~~prior to deposition~~, said first impure copper source of ~~in~~ said impure copper seed layer is substantially equivalent to said second impure copper source of said impure copper fill.

5. (Currently Amended) A copper interconnect as in claim 1, wherein ~~said copper in said first and second~~ impure copper source comprises impurities chosen from the group of Ag, As, C, Cd, Cl, Co, Cr, Fe, In, Mg, Mn, N, Ni, O, Pb, S, Sn, Tl, and Zn.

6-12. (Cancelled)

13. (Previously Presented) A copper interconnect comprising:

an insulating layer that has an opening;
a barrier layer that prevents substantial diffusion of copper through to said underlying insulating layer that is deposited on said underlying insulating layer and lines said opening;

an impure copper seed derived from an impure copper seed source with a content of impurity that is deposited on said barrier layer and fills said opening;

an impure copper derived from an impure copper source with a content of impurities that fills said opening in said underlying insulating layer that is deposited on said impure copper seed;

wherein material composition of said impure copper seed is substantially the same as material composition of said impure copper fill because said copper source of said impure copper seed layer is equivalent to said copper source of the impure copper,

however some impurities in the impure copper fill are absent from the impure copper seed layer as consequence of deposition of the impure copper seed layer; and;

wherein said impurity content comprises not more than 1.20% by weight and not less than or equal to 0.001% by weight of said impure copper seed layer.

14. (Cancelled)

15. (Original) A copper interconnect as in claim 13, wherein said impure copper from said impure copper seed source comprises impurities chosen from the group of Ag, As, C, Cd, Cl, Co, Cr, Fe, In, Mg, Mn, N, Ni, O, Pb, S, Sn, Tl, and Zn.

16-20. (Cancelled)